Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] An improved quick dump valve comprising:
a body having a central longitudinal bore with first and second opposing ends, the first end being configured to receive and secure a supply port adapter, the second end being configured to receive and secure a BOP port adapter, the body further including a transverse bore in fluid communication with the central longitudinal bore, the transverse bore defining a vent port;
the supply port adapter defining a supply port and the BOP port adapter defining a BOP port;
a shuttle having first and second ends with a longitudinal central bore extending from the first end to the second end, the longitudinal central bore including a reduced diameter flow restrictor;
a seal between the first end of the shuttle and the supply port adapter and a seal between the second end of the shuttle and the BOP port adapter;
the first end of the shuttle being of a larger diameter than the second end; and
the shuttle being adapted to slidably reciprocate in the body central bore from a vent position where the shuttle first end is in sealing contact with the supply port

adapter, to an open position where the shuttle first end is in sealing contact with the supply port adapter and the shuttle second end is in sealing contact with the BOP port adapter;

a ball check valve positioned in the longitudinal central bore of the shuttle to prevent fluid flow to the supply port through the longitudinal central bore of the shuttle when the valve is in the vent position; and

whereby upon increased fluid pressure in the BOP port the shuttle slides towards the supply port adapter into the vent position, thereby allowing a plurality of shuttle apertures to come into fluid communication with the transverse bore, allowing fluid to flow from the BOP port to the vent port, and whereby upon increased fluid pressure in the supply port the shuttle slides towards the BOP port adapter into the open position, thereby removing the shuttle apertures from fluid communication with the transverse bore to allow fluid flow from and through the supply port, through the longitudinal central bore of the shuttle, the reduced diameter flow restrictor and to and through the BOP port.

[c2] The apparatus of claim 1 wherein the seal between the first end of the shuttle and the supply port adapter is elastomeric and the seal between the second end of the shuttle and the BOP port adapter is metal to metal.

[c3] An improved quick dump valve comprising:
a body having a central longitudinal bore with first and second opposing ends, the first end being configured to receive and secure a supply port adapter, the second end being configured to receive and secure a BOP port adapter, the body further including a transverse bore in fluid communication with the central longitudinal bore, the transverse bore defining a vent port;
the supply port adapter defining a supply port and the BOP port adapter defining a BOP port;
a shuttle having first and second ends with a longitudinal central bore extending from the shuttle first end to the second end, the longitudinal central bore having a reduced diameter flow restrictor;
a seal between the first end of the shuttle and the supply port adapter and a seal between the second end of the shuttle and the BOP port adapter;
the first end of the shuttle engaging the supply port adapter and the second end engaging the BOP port adapter, the second end including a plurality of apertures, the shuttle being adapted to slidably reciprocate in the body central bore from a vent position where the shuttle first end is in sealing contact with the supply port adapter, to an open position where the shuttle first end is in sealing contact with the supply port adapter and the

second end is in sealing contact with the BOP adapter;
a ball check valve located in the longitudinal central bore of the shuttle to prevent fluid leakage through the longitudinal central bore of the shuttle to the supply port when the valve is in the vent position; and
whereby upon increased fluid pressure in the BOP port the shuttle slides towards the supply port adapter into the vent position, thereby allowing the shuttle apertures to come into fluid communication with the transverse bore, allowing fluid to flow from the BOP port to the vent port, and whereby upon increased fluid pressure in the supply port the shuttle slides towards the BOP port into the open position, thereby removing the shuttle apertures from fluid communication with the transverse bore to allow fluid flow from and through the supply port , through the longitudinal central bore of the shuttle, the reduced diameter flow restrictor, and to and through the BOP port.

[c4] The apparatus of claim 3 wherein the seal between the first end of the shuttle and the supply port adapter is elastomeric and the seal between the second end of the shuttle and the BOP port adapter is metal to metal.

[c5] The improved BOP operating system of claim 3 wherein the quick dump valve comprises:
a body having a central longitudinal bore with first and

second opposing ends, the first end being configured to receive and secure a supply port adapter, the second end being configured to receive and secure a BOP port adapter, the body further including a transverse bore in fluid communication with the central longitudinal bore, the transverse bore defining a vent port,
the supply port adapter defining a supply port and the BOP port adapter defining a BOP port;
a shuttle having first and second ends with a longitudinal central bore extending from the first end to the second end, the longitudinal central bore including a reduced diameter flow restrictor;
a seal between the first end of the shuttle and the supply port adapter and a seal between the second end of the shuttle and the BOP port adapter;
the first end of the shuttle being of a larger diameter than the second end; and
the shuttle being adapted to reciprocate in the body central bore from a vent position where the shuttle first end is in sealing contact with the supply port adapter, to an open position where the shuttle first end is in sealing contact with the supply port adapter and the shuttle second end is in sealing contact with the BOP port adapter;
a ball check valve positioned in the longitudinal central bore of the shuttle to prevent fluid flow to the supply port through the longitudinal central bore of the shuttle

when the valve is in the vent position; and
whereby upon increased fluid pressure in the BOP port the shuttle slides towards the supply port adapter into the vent position, thereby allowing a plurality of shuttle apertures to come into fluid communication with the transverse bore, allowing fluid to flow from the BOP port to the vent port, and whereby upon increased fluid pressure in the supply port the shuttle slides towards the BOP port adapter into the open position, thereby removing the shuttle apertures from fluid communication with the transverse bore to allow fluid flow from and through the supply port, through the longitudinal central bore of the shuttle, the reduced diameter flow restrictor and to and through the BOP port.

[c6] An improved BOP operating system having a BOP stack with open ports and close ports and hydraulically controlled rams adapted to move from an open position to a close position, wherein the improvement comprises: a plurality of quick dump valves proximate the open ports of the BOP stack, whereby he quick dump valve reduces the incidence of hydraulic shock, vibration and hose collapse and reduces the time necessary to move the shear rams from the open position to the close position and each dump valve includes:
a body having a central longitudinal bore with first and

second opposing ends, the first end being configured to receive and secure a supply port adapter, the second end being configured to receive and secure a BOP port adapter, the body further including a transverse bore in fluid communication with the central longitudinal bore, the transverse bore defining a vent port;

the supply port adapter defining a supply port and the BOP port adapter defining a BOP port;

a shuttle having first and second ends with a longitudinal central bore extending from the shuttle first end to the second end, the longitudinal central bore having a reduced diameter flow restrictor;

a seal between the first end of the shuttle and the supply port adapter and a seal between the second end of the shuttle and the BOP port adapter;

the first end of the shuttle engaging the supply port adapter and the second end engaging the BOP port adapter, the second end including a plurality of apertures, the shuttle being adapted to slidably reciprocate in the body central bore from a vent position where the shuttle first end is in sealing contact with the supply port adapter, to an open position where the shuttle first end is in sealing contact with the supply port adapter and the second end is in sealing contact with the BOP adapter;

a ball check valve located in the longitudinal central bore of the shuttle to prevent fluid flow through the longitu-

dinal central bore of the shuttle to the supply port when the valve is in the vent position; and

whereby upon increased fluid pressure in the BOP port the shuttle slides towards the supply port adapter into the vent position, thereby allowing the shuttle apertures to come into fluid communication with the transverse bore, allowing fluid to flow from the BOP port to the vent port, and whereby upon increased fluid pressure in the supply port the shuttle slides towards the BOP port into the open position, thereby removing the shuttle apertures from fluid communication with the transverse bore to allow fluid flow from and through the supply port , through the longitudinal central bore of the shuttle, the reduced diameter flow restrictor, and to and through the BOP port.